DB Name	Query	Hit Count	Set Name
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	l10 same promoter	20	L11
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	regulatory factor same (screen or assay or identify)	141	L10
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	l8 same promoter	20	L9
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	l7 same reporter	29	L8
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	l2 same polynucleotide$	72	L7
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	l5 same polynucleotide$	20	L6
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	l4 same (pool or library)	51	L5
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	l3 same reporter	125	L4
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	l2 same promoter	300	L3
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	transcription factor same (screen or assay or identify)	1065	L2
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	dna binding factor same (screen or assay or identify)	27	L1

Attachment to paper #9 FOAM

WEST

Help | Logout | Interrupt

Main Menu | Search Form | Posting Counts | Show S Numbers | Edit S Numbers | Preferences

Search Results -

Term	Documents
PROMOTER.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	68072
PROMOTERS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	36930
(10 SAME PROMOTER).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	20

Database: US Patents Full-Text Database
US Pre-Grant Publication Full-Text Database
JPO Abstracts Database
EPO Abstracts Database
Derwent World Patents Index
IBM Technical Disclosure Bulletins

Refine Search: `l10 same promoter` Clear

Search History

Today's Date: 12/2/2001

WEST

Help | Logout | Interrupt

Main Menu | Search Form | Posting Counts | Show S Numbers | Edit S Numbers | Preferences

Attachment to paper #9 FOAM

Search Results -

Term	Documents
(1 AND 5).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	1

Database: US Patents Full-Text Database; US Pre-Grant Publication Full-Text Database; JPO Abstracts Database; EPO Abstracts Database; Derwent World Patents Index; IBM Technical Disclosure Bulletins

Refine Search: `l1 and l5` Clear

Search History

Today's Date: 12/2/2001

DB Name	Query	Hit Count	Set Name
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	l1 and l5	1	L7
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	l5 same taxus	2	L6
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	limonene	5885	L5
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	l2 same reporter	16	L4
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	l2 same (pool or library)	8	L3
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	l1 same promoter$	62	L2
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	(isolate or identif$) near2 (transcription factor or regulatory factor)	236	L1

```
### Status: Path 1 of [Dialog Information Services via Modem]

### Status: Initializing TCP/IP using (UseTelnetProto 1 ServiceID pto-dialog)
Trying 3106900061...Open

DIALOG INFORMATION SERVICES
PLEASE LOGON:
 ******** HHHHHHHH SSSSSSSS?
### Status: Signing onto Dialog
 ********
ENTER PASSWORD:
 ******** HHHHHHHH SSSSSSSS? ********
Welcome to DIALOG
### Status: Connected


Dialog level 01.10.01D

Last logoff:  02dec01 11:34:47
Logon file001 02dec01 18:51:27
KWIC is set to 50.
HILIGHT set on as '*'
****                                  *****

File   1:ERIC  1966-2001/Nov 02
       (c) format only 2001 The Dialog Corporation

      Set  Items  Description
      ---  -----  -----------
Cost is in DialUnits
?b 434, 5, 155
       02dec01 18:51:34 User259980 Session D168.1
            $0.25    0.072 DialUnits File1
     $0.25  Estimated cost File1
     $0.25  Estimated cost this search
     $0.25  Estimated total session cost   0.072 DialUnits


SYSTEM:OS  - DIALOG OneSearch
  File 434:SciSearch(R) Cited Ref Sci  1974-1989/Dec
         (c) 1998 Inst for Sci Info
  File   5:Biosis Previews(R)  1969-2001/Nov W4
         (c) 2001 BIOSIS
  File 155:MEDLINE(R)  1966-2001/Dec W4

      Set  Items  Description
      ---  -----  -----------
?s isolate(s)transcription factor
           76895  ISOLATE
           10334  TRANSCRIPTION FACTOR
      S1       0  ISOLATE(S)TRANSCRIPTION FACTOR
?s isolate(s)transcription
           76895  ISOLATE
          375036  TRANSCRIPTION
      S2    2184  ISOLATE(S)TRANSCRIPTION
?s s2 and promoter?
            2184  S2
          194325  PROMOTER?
      S3     561  S2 AND PROMOTER?
?s s3 and reporter
             561  S3
           47407  REPORTER
      S4      85  S3 AND REPORTER
?s s4 and (pool or library)
              85  S4
           81811  POOL
           79181  LIBRARY
      S5      30  S4 AND (POOL OR LIBRARY)
?rd
...completed examining records
```

S6 17 RD (unique items)
?t/3/all

6/3/1 (Item 1 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

13348601 BIOSIS NO.: 200100555750
Characterization of human and mouse angiopoietin-like factor CDT6 *promoters*.
AUTHOR: Liu Janice J; Wilson Steven E(a)
AUTHOR ADDRESS: (a)Department of Ophthalmology, University of Washington School of Medicine, Seattle, WA, 98195-6485**USA
JOURNAL: IOVS 42 (12):p2776-2783 November, 2001
MEDIUM: print
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English

6/3/2 (Item 2 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

13104511 BIOSIS NO.: 200100311660
Cloning of a coproporphyrinogen oxidase *promoter* regulatory element binding protein.
AUTHOR: Takahashi S(a); Furuyama K(a); Kobayashi A(a); Taketani S; Harigae H(a); Yamamoto M; Igarashi K(a); Yokoyama H(a); Ishikawa I(a); Sasaki O (a); Kameoka J(a); Miyamura K(a); Meguro K(a); Hayashi N(a); Sasaki T(a)
AUTHOR ADDRESS: (a)Tohoku Univ. Sch. Med., Sendai**Japan
JOURNAL: Blood 96 (11 Part 1):p285a November 16, 2000
MEDIUM: print
CONFERENCE/MEETING: 42nd Annual Meeting of the American Society of Hematology San Francisco, California, USA December 01-05, 2000
SPONSOR: American Society of Hematology
ISSN: 0006-4971
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English

6/3/3 (Item 3 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

13038759 BIOSIS NO.: 200100245908
The mouse lens fiber-cell intrinsic membrane protein MP19 gene (Lim2) and granule membrane protein GMP-17 gene (Nkg7): Isolation and sequence analysis of two neighboring genes.
AUTHOR: Zhou Ling; Li XiaLian; Church Robert L(a)
AUTHOR ADDRESS: (a)Emory Eye Center, 1365B Clifton Rd, NE, Room B5601, Atlanta, GA, 30322: rlchurc@emory.edu**USA
JOURNAL: Molecular Vision 7 (12 Cited April 23, 2001):p79-88 April 2, 2001
MEDIUM: online
ISSN: 1090-0535
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English

6/3/4 (Item 4 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

13018962 BIOSIS NO.: 200100226111
Cloning of human acetyl-CoA carboxylase beta *promoter* and its regulation by muscle regulatory factors.
AUTHOR: Lee Jae-Jung; Moon Young-Ah; Ha Joo-Hun; Yoon Do-Jun; Ahn Yong-Ho;

Kim Kyung-Sup(a)
AUTHOR ADDRESS: (a)Dept. of Biochemistry and Molecular Biology, Institute of Genetic Science, Yonsei University College of Medicine, 134 Shinchon-dong Seodaemun-gu, Seoul, 120-752: kyungsup59@yumc.yonsei.ac.kr **South Korea
JOURNAL: Journal of Biological Chemistry 276 (4):p2576-2585 January 26, 2001
MEDIUM: print
ISSN: 0021-9258
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English

6/3/5 (Item 5 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

12400619 BIOSIS NO.: 200000154121
Active intracellular domain of notch enhances transcriptional activation of CCAAT/enhancer binding protein beta on a rat pregnancy-specific glycoprotein gene.
AUTHOR: Chen Hungwen(a); Chong Yichuen; Liu Chia-Lin
AUTHOR ADDRESS: (a)Institute of Biological Chemistry, Academia Sinica, Nankang, Taipei, 115**Taiwan
JOURNAL: Biochemistry. 39 (7):p1675-1682 Feb. 22, 2000
ISSN: 0006-2960
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English

6/3/6 (Item 6 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

11709014 BIOSIS NO.: 199800490745
Characterization of a nuclear deformed epidermal autoregulatory factor-1 (DEAF-1)-related (NUDR) transcriptional regulator protein.
AUTHOR: Huggenvik Jodi I(a); Michelson Rhett J; Collard Michael W; Ziemba Amy J; Gurley Paul; Mowen Kerri A
AUTHOR ADDRESS: (a)Dep. Physiol., South. Ill. Univ. Sch. Med., Carbondale, IL 62901-6523**USA
JOURNAL: Molecular Endocrinology 12 (10):p1619-1639 Oct. 1998, 1998
ISSN: 0888-8809
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

6/3/7 (Item 7 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

11266321 BIOSIS NO.: 199800047653
Molecular cloning, sequencing and functional study of the *promoter* region of the human alpha2C4-adrenergic receptor gene.
AUTHOR: Schaak Stephane; Devedjian Jean-Christophe; Cayla Cecile; Sender Yolande; Paris Herve(a)
AUTHOR ADDRESS: (a)Institut Natl. de la Sante et de la Recherche Medicale U.317, Institut Louis Bugnard, CHU Rangue**France
JOURNAL: Biochemical Journal 328 (2):p431-438 Dec. 1, 1997
ISSN: 0264-6021
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

6/3/8 (Item 8 from file: 5)

DIALOG(R)File 5:Biosis Previews(R)
(c) 2001 BIOSIS. All rts. reserv.

10757358 BIOSIS NO.: 199799378503
The alternative sigma factor sigma-28 of Legionella pneumophila restores flagellation and motility to an Escherichia coli fliA mutant.
AUTHOR: Heuner Klaus; Hacker Joerg; Brand Bettina C(a)
AUTHOR ADDRESS: (a)Inst. Mol. Infektionsbiol., Univ. Wuerzburg, Roentgenring 11, D-97070 Wuerzburg**Germany
JOURNAL: Journal of Bacteriology 179 (1):p17-23 1997
ISSN: 0021-9193
RECORD TYPE: Abstract
LANGUAGE: English

6/3/9 (Item 9 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
(c) 2001 BIOSIS. All rts. reserv.

10645253 BIOSIS NO.: 199699266398
Prolactin-like protein-C variant: Complementary deoxyribonucleic acid, unique six exon gene structure, and trophoblast cell-specific expression.
AUTHOR: Dai Guoli; Liu Bing; Szpirer Claude; Levan Goran; Kwok Simon C M; Soares Michael J(a)
AUTHOR ADDRESS: (a)Dep. Physiol., Univ. Kansas Med. Cent., Kansas City, KS 66160-7401**USA
JOURNAL: Endocrinology 137 (11):p5009-5019 1996
ISSN: 0013-7227
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

6/3/10 (Item 10 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
(c) 2001 BIOSIS. All rts. reserv.

10433987 BIOSIS NO.: 199699055132
Msn2p, a zinc finger DNA-binding protein, is the transcriptional activator of the multistress response in Saccharomyces cerevisiae.
AUTHOR: Schmitt Anthony P; McEntee Kevin(a)
AUTHOR ADDRESS: (a)Dep. Biol. Chem., Univ. Calif. Sch. Med., Univ. Calif., 900 Veterans Ave., Los Angeles, CA 90024**USA
JOURNAL: Proceedings of the National Academy of Sciences of the United States of America 93 (12):p5777-5782 1996
ISSN: 0027-8424
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

6/3/11 (Item 11 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
(c) 2001 BIOSIS. All rts. reserv.

10412637 BIOSIS NO.: 199699033782
GRIP1, a novel mouse protein that serves as a transcriptional coactivator in yeast for the hormone binding domains of steroid receptors.
AUTHOR: Hong Heng; Kohli Kulwant; Trivedi Alpa; Johnson Deborah L; Stallcup Michael R(a)
AUTHOR ADDRESS: (a)Dep. Pathol., University Southern California, Los Angeles, CA 90033**USA
JOURNAL: Proceedings of the National Academy of Sciences of the United States of America 93 (10):p4948-4952 1996
ISSN: 0027-8424
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

6/3/12 (Item 12 from file: 5)

DIALOG(R)File 5:Biosis Previews(R)
(c) 2001 BIOSIS. All rts. reserv.

09579682 BIOSIS NO.: 199598034600
Characterization of a Corticotropin-Releasing Hormone-Responsive Element in the Rat Proopiomelanocortin Gene *Promoter* and Molecular Cloning of Its Binding Protein.
AUTHOR: Jin Wei Dong; Boutillier Anne-Laurence; Glucksman Marc J; Salton Stephen R J; Loeffler Jean-Philippe; Roberts James L(a)
AUTHOR ADDRESS: (a)Fishberg Res. Cent. Neurobiol., Mt. Sinai Sch. Med., One Gustave Levy Place, New York, NY 10029-**USA
JOURNAL: Molecular Endocrinology 8 (10):p1377-1388 1994
ISSN: 0888-8809
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

6/3/13 (Item 13 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
(c) 2001 BIOSIS. All rts. reserv.

09261049 BIOSIS NO.: 199497269419
Activation of the glycoprotein hormone alpha-subunit *promoter* by a lIM-homeodomain transcription factor.
AUTHOR: Roberson Mark S; Schoderbek William E; Tremml Gabi; Maurer Richard A(a)
AUTHOR ADDRESS: (a)Dep. Cell Biol. Anat., L215 Oregon Health Sci. Univ., 3181 SW Sam Jackson Park Rd., Portland, OR**USA
JOURNAL: Molecular and Cellular Biology 14 (5):p2985-2993 1994
ISSN: 0270-7306
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

6/3/14 (Item 14 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
(c) 2001 BIOSIS. All rts. reserv.

07996584 BIOSIS NO.: 000093052257
GENETIC METHOD TO IDENTIFY REGULONS CONTROLLED BY NONESSENTIAL ELEMENTS ISOLATION OF A GENE DEPENDENT ON ALTERNATE TRANSCRIPTION FACTOR SIGMA-B OF BACILLUS-SUBTILIS
AUTHOR: BOYLAN S A; THOMAS M D; PRICE C W
AUTHOR ADDRESS: DEP. FOOD SCI. AND TECHNOL., UNIV. CALIF., DAVIS, CALIF. 95616.
JOURNAL: J BACTERIOL 173 (24). 1991. 7856-7866. 1991
FULL JOURNAL NAME: Journal of Bacteriology
CODEN: JOBAA
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

6/3/15 (Item 15 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
(c) 2001 BIOSIS. All rts. reserv.

07864870 BIOSIS NO.: 000092124236
ACTIVATION OF GLOBIN GENE EXPRESSION BY COMPLEMENTARY DNAS FROM INDUCED K562 CELLS EVIDENCE FOR INVOLVEMENT OF FERRITIN IN GLOBIN GENE EXPRESSION
AUTHOR: WU Y; NOGUCHI C T
AUTHOR ADDRESS: NIH, BLDG. 10, RM. 9N307, BETHESDA, MD. 20892.
JOURNAL: J BIOL CHEM 266 (26). 1991. 17566-17572. 1991
FULL JOURNAL NAME: Journal of Biological Chemistry
CODEN: JBCHA
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

6/3/16 (Item 1 from file: 155)

DIALOG(R)File 155:MEDLINE(R)

08771620 95318065 PMID: 7797489
Expression screening reveals an orphan receptor chick ovalbumin upstream *promoter* transcription factor I as a regulator of neurite/substrate-cell contacts and cell aggregation.
Connor H; Nornes H; Neuman T
Department of Anatomy and Neurobiology, Colorado State University, Fort Collins 80523, USA.
Journal of biological chemistry (UNITED STATES) Jun 23 1995, 270 (25) p15066-70, ISSN 0021-9258 Journal Code: HIV
Languages: ENGLISH
Document type: Journal Article
Record type: Completed

6/3/17 (Item 2 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

07168611 91373383 PMID: 1840594
Activation of globin gene expression by cDNAs from induced K562 cells. Evidence for involvement of ferritin in globin gene expression.
Wu YJ; Noguchi CT
Laboratory of Chemical Biology, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, Bethesda, Maryland 20892.
Journal of biological chemistry (UNITED STATES) Sep 15 1991, 266 (26) p17566-72, ISSN 0021-9258 Journal Code: HIV
Languages: ENGLISH
Document type: Journal Article
Record type: Completed
?ds

Set	Items	Description
S1	0	ISOLATE(S)TRANSCRIPTION FACTOR
S2	2184	ISOLATE(S)TRANSCRIPTION
S3	561	S2 AND PROMOTER?
S4	85	S3 AND REPORTER
S5	30	S4 AND (POOL OR LIBRARY)
S6	17	RD (unique items)

```
?s terpenoid
      S7    3429  TERPENOID
?s s7 and pathway
            3429  S7
          300666  PATHWAY
      S8     161  S7 AND PATHWAY
?s s8 and (transcription or regulatory or binding)
             161  S8
          375036  TRANSCRIPTION
          214241  REGULATORY
         1204726  BINDING
      S9      13  S8 AND (TRANSCRIPTION OR REGULATORY OR BINDING)
?rd
...completed examining records
     S10       9  RD (unique items)
?t/9/all
```

10/9/1 (Item 1 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

12895958 BIOSIS NO.: 200100103107
The jasmonate-inducible AP2/ERF-domain *transcription* factor ORCA3 activates gene expression via interaction with a jasmonate-responsive promoter element.
AUTHOR: van der Fits Leslie; Memelink Johan(a)
AUTHOR ADDRESS: (a)Clusius Laboratory, Institute of Molecular Plant Sciences, Leiden University, Wassenaarseweg 64, 2333 AL, Leiden: memelink@rulbim.leidenuniv.nl**Netherlands
JOURNAL: Plant Journal 25 (1):p43-53 January, 2001
MEDIUM: print

ISSN: 0960-7412
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English

ABSTRACT: The AP2/ERF-domain *transcription* factor ORCA3 is a master regulator of primary and secondary metabolism in Catharanthus roseus (periwinkle). Here we demonstrate that ORCA3 specifically binds to and activates gene expression via a previously characterized jasmonate- and elicitor-responsive element (JERE) in the promoter of the *terpenoid* indole alkaloid biosynthetic gene Strictosidine synthase (Str). Functional characterization of different domains in the ORCA3 protein in yeast and plant cells revealed the presence of an N-terminal acidic activation domain and a serine-rich C-terminal domain with a negative *regulatory* function. Orca3 mRNA accumulation was rapidly induced by the plant stress hormone methyljasmonate with biphasic kinetics. A precursor and an intermediate of the jasmonate biosynthetic *pathway* also induced Orca3 gene expression, further substantiating the role for ORCA3 in jasmonate signaling. The protein synthesis inhibitor cycloheximide did not inhibit jasmonate-responsive expression of Orca3, nor of its target genes Str and Tryptophan decarboxylase (Tdc). In conclusion, ORCA3 regulates jasmonate-responsive expression of the Str gene via direct interaction with the JERE. The activating activities of ORCA proteins do not seem to depend on jasmonate-induced de novo protein synthesis, but presumably occur via modification of pre-existing ORCA protein.

REGISTRY NUMBERS: 69669-72-3: STRICTOSIDINE SYNTHASE; 9042-64-2: TRYPTOPHAN DECARBOXYLASE
DESCRIPTORS:
MAJOR CONCEPTS: Molecular Genetics (Biochemistry and Molecular Biophysics); Chemical Coordination and Homeostasis
BIOSYSTEMATIC NAMES: Apocynaceae--Dicotyledones, Angiospermae, Spermatophyta, Plantae
ORGANISMS: Catharanthus roseus (periwinkle) (Apocynaceae)
BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): Angiosperms; Dicots; Plants; Spermatophytes; Vascular Plants
CHEMICALS & BIOCHEMICALS: ORCA3--AP2/EDRF-domain, *transcription* factor; jasmonate--gene expression, plant growth regulator; strictosidine synthase; tryptophan decarboxylase
GENE NAME: Catharanthus roseus Str gene (Apocynaceae)--target gene; Catharanthus roseus Tdc gene (Apocynaceae)--target gene
CONCEPT CODES:
12002 Physiology, General and Miscellaneous-General
03502 Genetics and Cytogenetics-General
03504 Genetics and Cytogenetics-Plant
10802 Enzymes-General and Comparative Studies; Coenzymes
51514 Plant Physiology, Biochemistry and Biophysics-Growth Substances
51522 Plant Physiology, Biochemistry and Biophysics-Chemical Constituents
51526 Plant Physiology, Biochemistry and Biophysics-General and Miscellaneous
BIOSYSTEMATIC CODES:
25580 Apocynaceae

12895257 BIOSIS NO.: 200100102406

A Catharanthus roseus BPF-1 homologue interacts with an elicitor-responsive region of the secondary metabolite biosynthetic gene Str and is induced by elicitor via a JA-independent signal transduction *pathway*.

AUTHOR: van der Fits Leslie; Zhang Hui; Menke Frank L H; Deneka Magdalena; Memelink Johan(a)
AUTHOR ADDRESS: (a)Institute of Molecular Plant Sciences, Clusius Laboratory, Leiden University, Wassenaarseweg 64, 2333 AL, Leiden: memelink@rulbim.Leidenuniv.nl**Netherlands

JOURNAL: Plant Molecular Biology 44 (5):p675-685 November, 2000
MEDIUM: print

ISSN: 0167-4412
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English

ABSTRACT: Plants respond to pathogen attack by induction of various defence responses, including the biosynthesis of protective secondary metabolites. In Catharanthus roseus, the elicitor-induced expression of the *terpenoid* indole alkaloid biosynthetic gene Strictosidine synthase (Str) is mediated via the plant stress hormone jasmonate. In the promoters of several defence-related genes, cis-acting elements have been identified that are important for transcriptional regulation upon stress signals. Here we show that an upstream region in the Str promoter confers responsiveness to partially purified yeast elicitor and jasmonate. Yeast one-hybrid screening with this element as a bait identified a MYB-like protein, which shows high homology to parsley box P-*binding* factor-1 (PcBPF-1). In vitro analyses showed that the Str promoter fragment contained a novel *binding* site for BPF-1-like proteins with higher *binding* affinity than the previously described box P. CrBPF-1 mRNA accumulated rapidly in elicitor-treated C. roseus suspension cells, whereas no induction was observed with jasmonate. Inhibitor studies indicated that CrBPF-1 plays a role in an elicitor-responsive but jasmonate-independent signal transduction *pathway*, acting downstream of protein phosphorylation and calcium influx.

DESCRIPTORS:
MAJOR CONCEPTS: Enzymology (Biochemistry and Molecular Biophysics); Molecular Genetics (Biochemistry and Molecular Biophysics); Infection
BIOSYSTEMATIC NAMES: Apocynaceae--Dicotyledones, Angiospermae, Spermatophyta, Plantae
ORGANISMS: Catharanthus roseus (Apocynaceae)
BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): Angiosperms; Dicots; Plants; Spermatophytes; Vascular Plants
CHEMICALS & BIOCHEMICALS: CrBPF-1 {Catharanthus roseus box P-*binding* factor-1}; defense-related genes; jasmonate--mediation, stress hormone; parsley box P-*binding* factor-1 {PcBPF-1}--protein; protective secondary metabolites--biosynthesis; purified yeast elicitor
MOLECULAR SEQUENCE DATABANK NUMBER: AJ251686--DDBJ, EMBL, GenBank, nucleotide sequence
GENE NAME: Catharanthus roseus Str gene (Catharanthus roseus Strictosidine synthase gene) (Apocynaceae)--biosynthetic, expression, promoter
METHODS & EQUIPMENT: in vitro analysis--analytical method; yeast one-hybrid screening--identification method, screening method
MISCELLANEOUS TERMS: signal transduction *pathway*--jasmonate-independent; stress signals; transcriptional regulation
CONCEPT CODES:
10802 Enzymes-General and Comparative Studies; Coenzymes
03502 Genetics and Cytogenetics-General
03504 Genetics and Cytogenetics-Plant
10062 Biochemical Studies-Nucleic Acids, Purines and Pyrimidines
10064 Biochemical Studies-Proteins, Peptides and Amino Acids
51518 Plant Physiology, Biochemistry and Biophysics-Enzymes
BIOSYSTEMATIC CODES:
25580 Apocynaceae

10/9/3 (Item 3 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

12867760 BIOSIS NO.: 200100074909
Cloning and expression of cDNAs encoding two enzymes of the MEP *pathway* in Catharanthus roseus.
AUTHOR: Veau Bertrand; Courtois Martine; Oudin Audrey; Chenieux Jean-Claude ; Rideau Marc(a); Clastre Marc
AUTHOR ADDRESS: (a)Laboratoire de Biologie Moleculaire et Biochimie vegetale, Faculte de Pharmacie, Universite de Tours, 31 avenue Monge, EA2106, 37200, Tours: rideau@univ-tours.fr**France

JOURNAL: Biochimica et Biophysica Acta 1517 (1):p159-163 15 December, 2000
MEDIUM: print
ISSN: 0006-3002
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English

ABSTRACT: Two periwinkle cDNAs (crdxr and crmecs) encoding enzymes of the non-mevalonate *terpenoid* *pathway* were characterized using reverse *transcription*-PCR strategy based on the design of degenerated oligonucleotides. The deduced amino acid sequence of crdxr is homologue to 1-deoxy-D-xylulose 5-phosphate reductoisomerases. Crmecs represents the first plant cDNA encoding a protein similar to the 2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase from Escherichia coli. Expression of crdxr and crmecs genes was up-regulated in periwinkle cells producing monoterpenoid indole alkaloids. Involvement of the 2C-methyl-D-erythritol 4-phosphate *pathway* in alkaloid biosynthesis is discussed.

REGISTRY NUMBERS: 210756-42-6: 1-DEOXY-D-XYLULOSE 5-PHOSPHATE REDUCTOISOMERASE; 287480-92-6: 2C-METHYL-D-ERYTHRITOL 2 4-CYCLODIPHOSPHATE SYNTHASE
DESCRIPTORS:
MAJOR CONCEPTS: Enzymology (Biochemistry and Molecular Biophysics); Molecular Genetics (Biochemistry and Molecular Biophysics); Methods and Techniques
BIOSYSTEMATIC NAMES: Apocynaceae--Dicotyledones, Angiospermae, Spermatophyta, Plantae
ORGANISMS: Catharanthus roseus (periwinkle) (Apocynaceae)
BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): Angiosperms; Dicots; Plants; Spermatophytes; Vascular Plants
CHEMICALS & BIOCHEMICALS: 1-deoxy-D-xylulose 5-phosphate reductoisomerase; 2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase
MOLECULAR SEQUENCE DATABANK NUMBER: AF250235--GenBank, amino acid sequence, nucleotide sequence; AF250236--GenBank, amino acid sequence, nucleotide sequence
GENE NAME: Catharanthus roseus crdxr gene (Apocynaceae)--cloning, expression; Catharanthus roseus crmecs gene (Apocynaceae)--cloning, expression
METHODS & EQUIPMENT: reverse transcriptase-polymerase chain reaction--genetic method, polymerase chain reaction
MISCELLANEOUS TERMS: non-mevalonate *terpenoid* *pathway*
CONCEPT CODES:
10802 Enzymes-General and Comparative Studies; Coenzymes
03502 Genetics and Cytogenetics-General
03504 Genetics and Cytogenetics-Plant
10062 Biochemical Studies-Nucleic Acids, Purines and Pyrimidines
10064 Biochemical Studies-Proteins, Peptides and Amino Acids
51518 Plant Physiology, Biochemistry and Biophysics-Enzymes
BIOSYSTEMATIC CODES:
25580 Apocynaceae

10/9/4 (Item 4 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

12322210 BIOSIS NO.: 200000075712
Identification of UV-B light-responsive regions in the promoter of the tryptophan decarboxylase gene from Catharanthus roseus.
AUTHOR: Ouwerkerk Pieter B F; Hallard Didier; Verpoorte Rob; Memelink Johan (a)
AUTHOR ADDRESS: (a)Clusius Laboratory, Institute of Molecular Plant Sciences, Leiden University, Wassenaarseweg 64, 2333 AL, Leiden** Netherlands
JOURNAL: Plant Molecular Biology 41 (4):p491-503 Nov., 1999
ISSN: 0167-4412
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

SUMMARY LANGUAGE: English

ABSTRACT: The tryptophan decarboxylase (Tdc) gene encodes a key enzyme in the biosynthesis of *terpenoid* indole alkaloids (TIAs) in Catharanthus roseus. TIAs absorb ultraviolet light (UV) and putative functions in plants include a role as UV protectants. In support of this possible function we demonstrate here that UV light induces accumulation of several TIAs as well as expression of the Tdc gene in C. roseus. In addition, in tobacco a Tdc-gusA construct was found to be specifically induced by UV-B light. Lack of induction by UV-A or other wavelengths of light indicate that Tdc expression is regulated by a specific UV-B receptor and corresponding signal transduction *pathway*. To identify UV-responsive Tdc promoter elements, a loss-of-function analysis was performed, in which deletion derivatives were fused to the gusA reporter gene and analysed in transgenic tobacco plants. Truncation of the Tdc promoter from -1818 (relative to the start of *transcription*) to -160 reduced expression levels two-fold without affecting the qualitative UV response. Deletion to -37 further reduced expression levels five-fold, but the DELTA37 promoter also remained UV-responsive. Subsequently, the -160 to -37 region was further studied by gain-of-function experiments, in which the transcriptional activities of tetramerized subfragments fused to truncated promoters were analysed. Combination of the data identified several functional regions in the -160 to +198 promoter. The -160 to -99 region acts as the main transcriptional enhancer. UV-responsive elements appeared to be redundant in the -160 Tdc promoter and to reside between -99 and -37 and between -37 and +198.

DESCRIPTORS:
MAJOR CONCEPTS: Enzymology (Biochemistry and Molecular Biophysics); Molecular Genetics (Biochemistry and Molecular Biophysics); Radiation Biology
BIOSYSTEMATIC NAMES: Apocynaceae--Dicotyledones, Angiospermae, Spermatophyta, Plantae
ORGANISMS: Catharanthus roseus (Apocynaceae)
BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): Angiosperms; Dicots; Plants; Spermatophytes; Vascular Plants
CHEMICALS & BIOCHEMICALS: *terpenoid* indole alkaloids; Catharanthus roseus Tdc gene (Apocynaceae)--tryptophan decarboxylase
MOLECULAR SEQUENCE DATABANK NUMBER: X67662--DDBJ, EMBL, GenBank, nucleotide sequence
MISCELLANEOUS TERMS: UV-B light--responsive regions; transcriptional enhancement
CONCEPT CODES:
03504 Genetics and Cytogenetics-Plant
10062 Biochemical Studies-Nucleic Acids, Purines and Pyrimidines
10506 Biophysics-Molecular Properties and Macromolecules
10604 External Effects-Light and Darkness
51516 Plant Physiology, Biochemistry and Biophysics-Light and Radiation Effects
51518 Plant Physiology, Biochemistry and Biophysics-Enzymes
BIOSYSTEMATIC CODES:
25580 Apocynaceae

10/9/5 (Item 5 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

11914730 BIOSIS NO.: 199900160839
Evaluation of the Gossypium gene pool for foliar *terpenoid* aldehydes.
AUTHOR: Khan M Altaf; Stewart J M(a); Murphy J B
AUTHOR ADDRESS: (a)Agron. Dep., Univ. Arkansas, Fayetteville, AR 72701**USA
JOURNAL: Crop Science 39 (1):p253-258 Jan.-Feb., 1999
ISSN: 0011-183X
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: *Terpenoid* aldehydes (TAs) accumulate in the lysigenous glands of Gossypium L. (cotton genus) and related genera and are toxic to many insect pests. Knowledge of the diversity of TAS available in the

Gossypium germplasm pool could be useful in developing cultivars with enhanced expression of specific compounds to improve hostplant resistance (HPR). Qualitative and quantitative foliar analyses for seven TAs were performed by means of high performance liquid chromatography (HPLC) on Thespesia thespesioides (Brown ex Benth.) Fryxell and on 40 Gossypium genotypes comprising 30 species. Gossypium mustelinum Miers ex Watt had the highest leaf concentration of the helioddes H1 and H4 and total TAs, while heliocides H2 and H3, and hemigossypolone were highest in G. capitis-viridis Mauer, G. lobatum Gentry, and G. nobile Fryxell, Craven & Stewart, respectively. Gossypol was highest in T. thespesioides and an accession of G. laxum Phillips, although the former contained 60% more than the latter. Gossypium raimondii Ulbrich contained principally the unique TA, raimondal. Gossypol was the principal foliar TA in most of the D genome species, whereas, species in the B, C, F, G, and K genomic groups had very low concentrations of foliar gossypol compared with other TAs. In the AD genome, with minor exceptions, all six TAs occurred. Three distinct TA patterns were observed among seven G. laxum accessions. The diversity in biosynthesis and accumulation of TAs among Gossypium species should provide useful germplasm for modifying the TA quality and quantity of cotton. Resource material is also identified to study the metabolic pathways and *regulatory* mechanisms controlling the synthesis of these compounds.

DESCRIPTORS:
MAJOR CONCEPTS: Agronomy (Agriculture); Economic Entomology; Metabolism; Molecular Genetics (Biochemistry and Molecular Biophysics); Pest Assessment Control and Management; Toxicology
BIOSYSTEMATIC NAMES: Malvaceae--Dicotyledones, Angiospermae, Spermatophyta, Plantae
ORGANISMS: Gossypium capitis viridis (Malvaceae); Gossypium lobatum (Malvaceae); Gossypium nobile (Malvaceae); Gossypium raimondii (Malvaceae); Gossypium spp. (Malvaceae)--cotton species, crop
ORGANISMS: PARTS ETC: leaf--chemistry; lysigenous gland
BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): Angiosperms; Dicots; Plants; Spermatophytes; Vascular Plants
CHEMICALS & BIOCHEMICALS: *terpenoid* aldehydes--biosynthesis, insect toxicity, defense chemical
MISCELLANEOUS TERMS: cultivar improvement; gene pool; metabolic *pathway*; plant breeding
CONCEPT CODES:
52502 Agronomy-General, Miscellaneous and Mixed Crops
03504 Genetics and Cytogenetics-Plant
13002 Metabolism-General Metabolism; Metabolic Pathways
22501 Toxicology-General; Methods and Experimental
51519 Plant Physiology, Biochemistry and Biophysics-Metabolism
60014 Economic Entomology-Biological Control
BIOSYSTEMATIC CODES:
26330 Malvaceae

10/9/6 (Item 6 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

11615683 BIOSIS NO.: 199800397472
Some caveats for bioengineering *terpenoid* metabolism in plants.
AUTHOR: McCaskill David; Croteau Rodney
AUTHOR ADDRESS: Inst. Biol. Chem., Washington State Univ., Pullman, WA 99164-6340**USA
JOURNAL: Trends in Biotechnology 16 (8):p349-355 Aug., 1998
ISSN: 0167-7799
DOCUMENT TYPE: Literature Review
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: The engineering of *terpenoid* formation in plants although highly appealing from a biotechnological viewpoint, is particularly challenging because of the myriad of terpenoids produced from a single intermediate (isopentenyl diphosphate) and the complex organization and subtle *regulatory* features of the biosynthetic pathways. This article surveys many of the biochemical issues that must be appreciated before

attempting to develop rational strategies for the bioengineering of *terpenoid* biosynthesis.

REGISTRY NUMBERS: 358-71-4: ISOPENTENYL DIPHOSPHATE
DESCRIPTORS:
MAJOR CONCEPTS: Metabolism
BIOSYSTEMATIC NAMES: Plantae
ORGANISMS: plants (Plantae)
BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): Plants
CHEMICALS & BIOCHEMICALS: isopentenyl diphosphate; *terpenoid*--bioengineered, metabolism
MISCELLANEOUS TERMS: biosynthetic *pathway*; biotechnology
CONCEPT CODES:
51519 Plant Physiology, Biochemistry and Biophysics-Metabolism
10060 Biochemical Studies-General
10506 Biophysics-Molecular Properties and Macromolecules
13002 Metabolism-General Metabolism; Metabolic Pathways
51522 Plant Physiology, Biochemistry and Biophysics-Chemical Constituents
51524 Plant Physiology, Biochemistry and Biophysics-Apparatus and Methods
BIOSYSTEMATIC CODES:
11000 Plantae-Unspecified

10/9/7 (Item 7 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

09267143 BIOSIS NO.: 199497275513
Enzymological aspects of the redirection of *terpenoid* biosynthesis in elicitor-treated cultures of Tabernaemontana divaricata.
AUTHOR: Fulton Daniel C; Kroon Paul A; Threlfall David R(a)
AUTHOR ADDRESS: (a)Dep. Applied Biol., Univ. Hull, Hull HU6 7RX**UK
JOURNAL: Phytochemistry (Oxford) 35 (5):p1183-1186 1994
ISSN: 0031-9422
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: The elicitor-mediated induction of pentacyclic triterpenoid phytoalexin accumulation in cells of five-day-old suspension cultures of Tabernaemontana divaricata is accompanied by: a rapid and transient increase in HMG-CoA reductase (EC 1.1.1.34) activity; an increase in IPP isomerase (EC 5.3.3.2), prenyl transferase (EC 2.5.1.1) and squalene synthetase (EC 2.5.1.21) activity; a rapid inhibition of squalene 2,3-oxide:cycloartenol cyclase activity (EC 5.4.99.8), and a rapid and relatively transient appearance of squalene 2,3-oxide:amyrin cyclase (EC 5.4.99.-) activity. These findings are entirely consistent with an elicitor-induced redirection of the cytosolic-microsomal *pathway* of *terpenoid* biosynthesis away from phytosterol biosynthesis and towards pentacyclic triterpenoid phytoalexin biosynthesis. The switch being mediated as a direct result of the rapid inhibition of squalene 2,3-oxide: cycloartenol cyclase activity just prior to the de novo synthesis of squalene 2,3-oxide: amyrin cyclase and the other enzymes on the post-squalene 2,3-oxide span of the pentacyclic triterpenoid phytoalexin *pathway*. The increased activities of the enzymes common to both pathways reflects the fact that the rate of accumulation of pentacyclic triterpenoid phytoalexins in elicited cultures is more rapid than the rate of phytosterol biosynthesis in control cultures. The very rapid and transient increase in HMG-CoA reductase activity points to the microsomal form(s) of this enzyme having a key *regulatory* role in controlling the flux of carbon into the cytosolic-microsomal *pathway* of *terpenoid* biosynthesis.

REGISTRY NUMBERS: 9028-35-7: EC 1.1.1.34; 9032-79-5: PRENYL TRANSFERASE; 9032-79-5: EC 2.5.1.1; 111-02-4: SQUALENE; 9074-90-2: CYCLASE
DESCRIPTORS:
MAJOR CONCEPTS: Biochemistry and Molecular Biophysics; Cell Biology; Enzymology (Biochemistry and Molecular Biophysics); Metabolism
BIOSYSTEMATIC NAMES: Apocynaceae--Dicotyledones, Angiospermae,

Spermatophyta, Plantae
ORGANISMS: Tabernaemontana divaricata (Apocynaceae)
BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): angiosperms; dicots; plants; spermatophytes; vascular plants
CHEMICALS & BIOCHEMICALS: EC 1.1.1.34; PRENYL TRANSFERASE; EC 2.5.1.1; SQUALENE; CYCLASE
MISCELLANEOUS TERMS: CELL SUSPENSION; CYTOSOLIC-MICROSOMAL *PATHWAY*; ENZYME ACTIVITY; HMG-COA REDUCTASE EC 1.1.1.34; IPP ISOMERASE EC 5.3.3.2; PENTACYCLIC TRITERPENOID PHYTOALEXINS; PHYTOSTEROLS; PRENYL TRANSFERASE EC 2.5.1.1; SQUALENE SYNTHETASE EC 5.4.99.8; SQUALENE 2,3-OXIDE:AMYRIN CYCLASE EC 5.4.99
CONCEPT CODES:
02504 Cytology and Cytochemistry-Plant
10066 Biochemical Studies-Lipids
10808 Enzymes-Physiological Studies
13006 Metabolism-Lipids
51518 Plant Physiology, Biochemistry and Biophysics-Enzymes
51519 Plant Physiology, Biochemistry and Biophysics-Metabolism
10064 Biochemical Studies-Proteins, Peptides and Amino Acids
10067 Biochemical Studies-Sterols and Steroids
BIOSYSTEMATIC CODES:
25580 Apocynaceae

10/9/8 (Item 1 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

10205812 99320820 PMID: 10394897
Nuclear factors GT-1 and 3AF1 interact with multiple sequences within the promoter of the Tdc gene from Madagascar periwinkle: GT-1 is involved in UV light-induced expression.
Ouwerkerk PB; Trimborn TO; Hilliou F; Memelink J
Institute of Molecular Plant Sciences, Leiden University, Clusius Laboratory, The Netherlands.
Molecular & general genetics (GERMANY) Jun 1999, 261 (4-5) p610-22, ISSN 0026-8925 Journal Code: NGP
Languages: ENGLISH
Document type: Journal Article
Record type: Completed
Subfile: INDEX MEDICUS
Plant secondary metabolites of the *terpenoid* indole alkaloid (TIA) class comprise several compounds with pharmaceutical applications. A key step in the TIA biosynthetic *pathway* is catalysed by the enzyme tryptophan decarboxylase (TDC), which channels the primary metabolite tryptophan into TIA metabolism. In Catharanthus roseus (Madagascar periwinkle), the Tdc gene is expressed throughout plant development. Moreover, Tdc gene expression is induced by external stress signals, such as fungal elicitor and UV light. In a previous study of Tdc promoter architecture in transgenic tobacco it was shown that the -538 to -112 region is a quantitative determinant for the expression level in different plant organs. Within this sequence one particular region (-160 to -99) was identified as the major contributor to basal expression and another region (-99 to -37) was shown to be required for induction by fungal elicitor. Here, the in vitro *binding* of nuclear factors to the -572 to -37 region is described. In extracts from tobacco and C. roseus, two *binding* activities were detected that could be identified as the previously described nuclear factors GT-1 and 3AF1, based on their mobility and *binding* characteristics. Both factors appeared to interact with multiple regions in the Tdc promoter. Mutagenesis of GT-1 *binding* sites in the Tdc promoter did not affect the basal or elicitor-induced expression levels. However, induction of the Tdc promoter constructs by UV light was significantly lower, thereby demonstrating a functional role for GT-1 in the induction of Tdc expression by UV light.
Descriptors: Aromatic-L-Amino-Acid Decarboxylases--genetics--GE; *DNA-*Binding* Proteins--metabolism--ME; *Gene Expression Regulation, Plant --radiation effects--RE; *Nuclear Proteins--metabolism--ME; *Plant Proteins --metabolism--ME; *Plants--genetics--GE; *Promoter Regions (Genetics); *Ultraviolet Rays; Aromatic-L-Amino-Acid Decarboxylases--metabolism--ME; Base Sequence; *Binding* Sites; Cell Nucleus--metabolism--ME; Cells, Cultured; Madagascar; Molecular Sequence Data; Plants--radiation effects --RE; Plants, Transgenic; TATA Box; Tobacco; *Transcription* Factors

--metabolism--ME; Zinc Fingers
CAS Registry No.: 0 (DNA-Binding Proteins); 0 (Nuclear Proteins); 0 (Plant Proteins); 0 (Transcription Factors); 0 (nuclear factor GT-1); 151472-25-2 (3AF1 protein)
Enzyme No.: EC 4.1.1.28 (Aromatic-L-Amino-Acid Decarboxylases)
Record Date Created: 19990730

10/9/9 (Item 2 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

09926140 99007235 PMID: 9789009
A cytochrome P450 *terpenoid* hydroxylase linked to the suppression of insect juvenile hormone synthesis.
Sutherland TD; Unnithan GC; Andersen JF; Evans PH; Murataliev MB; Szabo LZ; Mash EA; Bowers WS; Feyereisen R
Department of Entomology, University of Arizona, Tucson, AZ 85721, USA.
Proceedings of the National Academy of Sciences of the United States of America (UNITED STATES) Oct 27 1998, 95 (22) p12884-9, ISSN 0027-8424 Journal Code: PV3
Contract/Grant No.: DK34549, DK, NIDDK
Languages: ENGLISH
Document type: Journal Article
Record type: Completed
Subfile: INDEX MEDICUS
A cDNA encoding a cytochrome P450 enzyme was isolated from a cDNA library of the corpora allata (CA) from reproductively active Diploptera punctata cockroaches. This P450 from the endocrine glands that produce the insect juvenile hormone (JH) is most closely related to P450 proteins of family 4 and was named CYP4C7. The CYP4C7 gene is expressed selectively in the CA; its message could not be detected in the fat body, corpora cardiaca, or brain, but trace levels of expression were found in the midgut and caeca. The levels of CYP4C7 mRNA in the CA, measured by ribonuclease protection assays, were linked to the activity cycle of the glands. In adult females, CYP4C7 expression increased immediately after the peak of JH synthesis, reaching a maximum on day 7, just before oviposition. mRNA levels then declined after oviposition and during pregnancy. The CYP4C7 protein was produced in Escherichia coli as a C-terminal His-tagged recombinant protein. In a reconstituted system with insect NADPH cytochrome P450 reductase, cytochrome b5, and NADPH, the purified CYP4C7 metabolized (2E,6E)-farnesol to a more polar product that was identified by GC-MS and by NMR as (10E)-12-hydroxyfarnesol. CYP4C7 converted JH III to 12-trans-hydroxy JH III and metabolized other JH-like sesquiterpenoids as well. This omega-hydroxylation of sesquiterpenoids appears to be a metabolic *pathway* in the corpora allata that may play a role in the suppression of JH biosynthesis at the end of the gonotrophic cycle.
Tags: Animal; Female; Support, U.S. Gov't, P.H.S.
Descriptors: *Cockroaches--metabolism--ME; *Cytochrome P-450--genetics --GE; *Cytochrome P-450--metabolism--ME; *Gene Expression Regulation, Developmental; *Hydroxylases--genetics--GE; *Hydroxylases--metabolism--ME; *Juvenile Hormones--biosynthesis--BI; Amino Acid Sequence; Base Sequence; Cloning, Molecular; Cockroaches--genetics--GE; Cockroaches --growth and development--GD; Cytochrome P-450--chemistry--CH; DNA Primers; Escherichia coli; Gene Expression Regulation, Enzymologic; Hydroxylases--chemistry--CH; Molecular Sequence Data; Mutagenesis, Site-Directed; Nuclear Magnetic Resonance, Biomolecular; Oviposition; Polymerase Chain Reaction; Recombinant Proteins--chemistry--CH; Recombinant Proteins--metabolism--ME; Sequence Alignment; Sequence Homology, Amino Acid; *Transcription*, Genetic
Molecular Sequence Databank No.: GENBANK/AF071072; GENBANK/AF071073; GENBANK/AF071074; GENBANK/AF071075
CAS Registry No.: 0 (DNA Primers); 0 (Juvenile Hormones); 0 (Recombinant Proteins); 9035-51-2 (Cytochrome P-450)
Enzyme No.: EC 1.14. (Hydroxylases); EC 1.14.- (cytochrome P-450 CYP4C7)
Record Date Created: 19981124
?ds

Set	Items	Description
S1	0	ISOLATE(S)TRANSCRIPTION FACTOR
S2	2184	ISOLATE(S)TRANSCRIPTION
S3	561	S2 AND PROMOTER?

```
S4          85   S3 AND REPORTER
S5          30   S4 AND (POOL OR LIBRARY)
S6          17   RD (unique items)
S7        3429   TERPENOID
S8         161   S7 AND PATHWAY
S9          13   S8 AND (TRANSCRIPTION OR REGULATORY OR BINDING)
S10          9   RD (unique items)
?logoff
       02dec01 18:59:33 User259980 Session D168.2
            $2.38    0.166 DialUnits File434
     $2.38  Estimated cost File434
            $5.09    0.908 DialUnits File5
              $24.75  15 Type(s) in Format  3
              $11.55  7 Type(s) in Format  9
            $36.30  22 Types
    $41.39  Estimated cost File5
            $2.26    0.706 DialUnits File155
               $0.40  2 Type(s) in Format  3
               $0.40  2 Type(s) in Format  9
            $0.80  4 Types
     $3.06  Estimated cost File155
            OneSearch, 3 files,  1.781 DialUnits FileOS
     $0.40  TYMNET
    $47.23  Estimated cost this search
    $47.48  Estimated total session cost   1.853 DialUnits


### Status: Signed Off. (9 minutes)
```